

### Problem 3.5 Finding the Point of Intersection

At Fabulous Fabian's Bakery, the expenses  $E$  to make  $n$  cakes per month is given by the equation  $E = 825 + 3.25n$ .

The income  $I$  for selling  $n$  cakes is given by the equation  $I = 8.20n$ .

- A. In the equations for  $I$  and  $E$ , what information do the  $y$ -intercepts represent? What about the coefficients of  $n$ ?
- B. Fabian sells 100 cakes in January.
  - 1. What are his expenses and his income?
  - 2. Does he make a profit? Describe how you found your answer.
- C. In April, Fabian's expenses are \$5,700.
  - 1. How many cakes does he sell?
  - 2. What is the income for producing this number of cakes?
  - 3. Does he make a profit? Explain.
- D. The *break-even point* is when expenses equal income ( $E = I$ ). Fabian thinks that this information is useful.
  - 1. Describe how you can find Fabian's break-even point symbolically. Find the break-even point.
  - 2. Describe another method for finding the break-even point.

**ACE** Homework starts on page 57.

